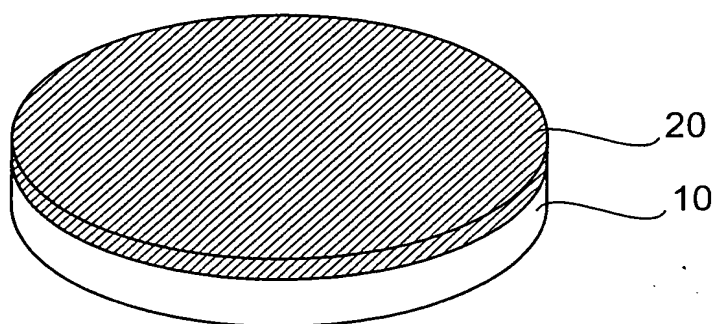
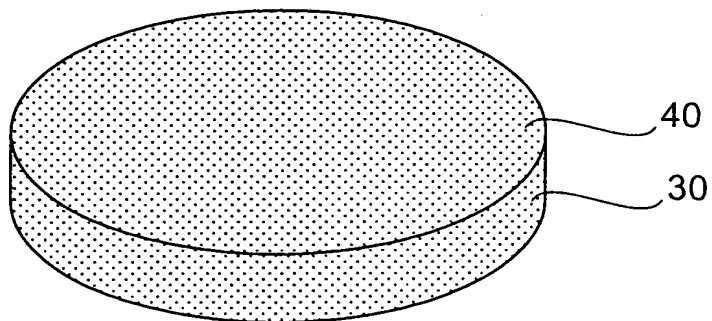
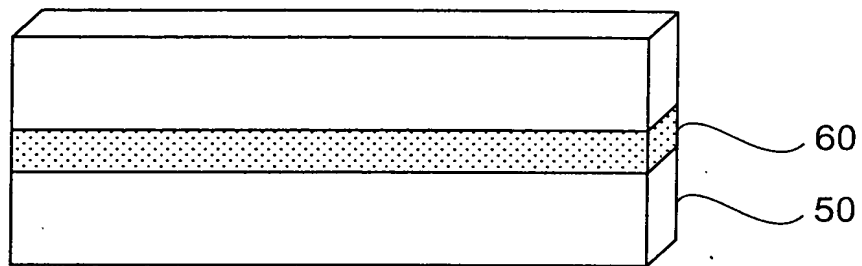
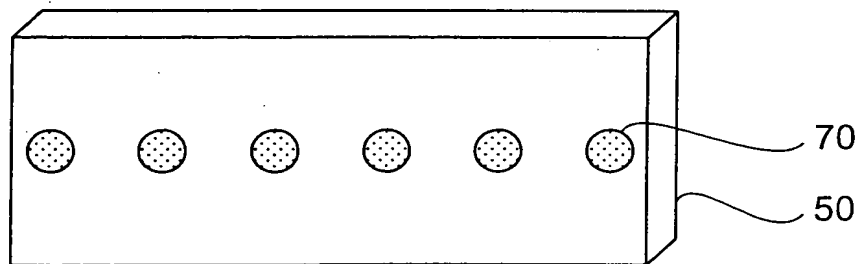


**Fig.1**

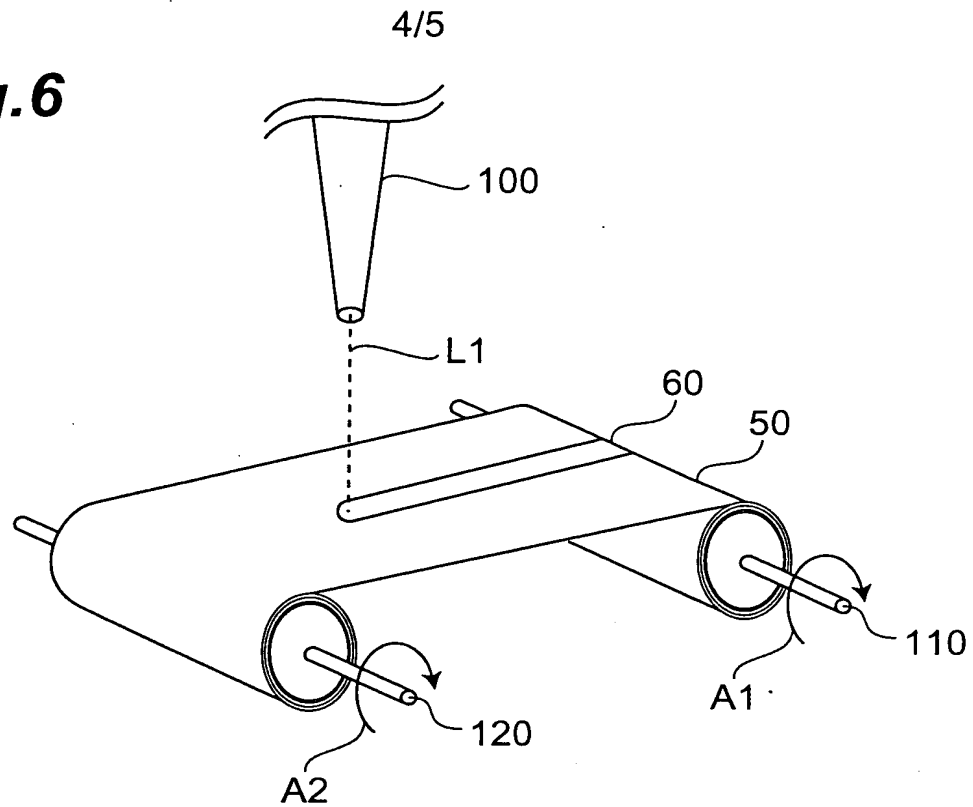
	HIGH-SPEED PARTICLE	REACTION	LIFETIME	THRESHOLD VALUE	NATURE VAIABILITY
①	PROTON p	$^{11}\text{B}(\text{p},\text{n})^{11}\text{C}$	20.4min	3.0MeV	80.1%
②	PROTON p	$^{16}\text{O}(\text{p}, \alpha)^{13}\text{N}$	9.96min	5.5MeV	99.8%
③	PROTON p	$^{15}\text{N}(\text{p},\text{n})^{15}\text{O}$	2.04min	3.7MeV	0.368%
④	PROTON p	$^{18}\text{O}(\text{p},\text{n})^{18}\text{F}$	109.7min	2.6MeV	0.205%
⑤	PROTON p	$^{63}\text{Cu}(\text{p},\text{n})^{63}\text{Zn}$	38.4min	4MeV	69.17%
⑥	DEUTERON d	$^{12}\text{C}(\text{d},\text{n})^{13}\text{N}$	9.96min	0.3MeV	98.93%
⑦	DEUTERON d	$^{14}\text{N}(\text{d},\text{n})^{15}\text{O}$	2.04min	0MeV	99.63%
⑧	DEUTERON d	$^{20}\text{Ne}(\text{d}, \alpha)^{18}\text{F}$	109.7min	0MeV	90.48%
⑨	DEUTERON d	$^{10}\text{B}(\text{d},\text{n})^{11}\text{C}$	20.4min	?	19.9%

**Fig.2**1  
↓**Fig.3**2  
↓

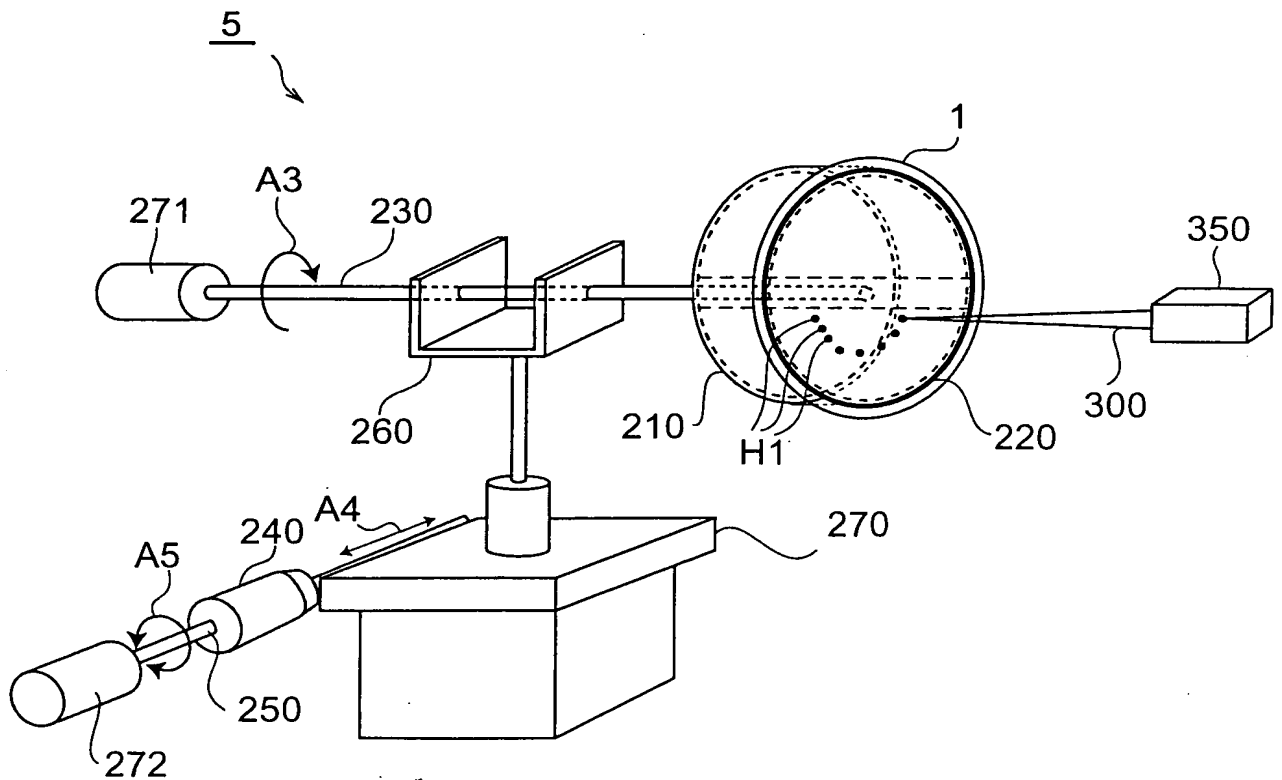
**Fig.4**3  
↓**Fig.5**4  
↓

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**Fig.6**



**Fig.7**



**Fig.8**